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DOI:
10.1016/j.worlddev.2015.11.008

Document Version
Early version, also known as pre-print

Link to publication record in King's Research Portal

Citation for published version (APA):
Mustafa, D., Altz-Stamm, A., & Scott, L. M. (2016). Water User Associations and the Politics of Water in Jordan. *WORLD DEVELOPMENT*, *79*, 164-176. https://doi.org/10.1016/j.worlddev.2015.11.008

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Introduction: Political Mediations in Water Scarcity

Jordan is one of the most water scarce countries in the world, or so goes the popular refrain. More than thirty years of scholarship drawing upon political-economic, critical realist and socio-nature frameworks has essentially questioned the Malthusian idea of resource scarcity being driven by population growth in most environmental resources sectors from forestry to agriculture to bio-diversity (e.g., see Kull 2000, Robins 2011, Peet and Watts 2004). In the water sector, however, the notion of socially-unmediated, absolute scarcity continues to have remarkable resilience, most persistently in the context of water resources in the Middle East and North Africa (MENA) region. Jordan is somewhat at the epicenter of the debate, with international donors and research communities putting forth significant efforts to understanding and then mitigating the consequences of that scarcity (e.g. see USAID 2011, Bonn 2013). Most of the research literature on the Jordanian water sector has focused on the national- and international-scale dimensions of water politics, supply enhancement, management and conservation questions (e.g., see Yorke 2013, DAI 2012). In this paper we move beyond the national-scale supply side approach towards addressing water security in Jordan and instead highlight the politics of access to and control over water. We focus on the case of water user associations (WUAs) in the Jordan Valley (JV), drawing upon insights from a series of interviews conducted with farmers and officials working in this arena (Figure 1). We furthermore draw upon a series of interviews conducted at the policy level in Jordan to contextualize the WUA case study within the larger political economy of water management in the country. With the following

article, we hope to contribute to the literature on the politics of water scarcity across local and national and international scales.

The predominantly national- and international-scale water scholarship on Jordan, just as with many other countries, has centered upon the volumetric measures of water. Such measures, on the one hand, are the essential currency of intersectoral, regional and transboundary water flows and the largely technocratic thinking thereupon. On the other hand, they also tend to hide as much as they reveal. They hide, in the first instance, the materiality of water as it intersects, mostly at the local scale, with human labor and bodies to produce use and exchange values. The same cubic meter numbers also tend to hide the discursive worlds of meaning, memory, emotion, and connection that humans inevitably ascribe to and realize through water (e.g., see Mustafa 2013). Last but not least, the big volumetric numbers demand and are given an authenticity and authority precisely because they offer a [false] sense of systemic logic to the circulation of water through the hydro-social metabolism, with tidy lines connecting different parts of the hydrologic system without the interruption of the social system (e.g. see Figure 2 as a schematic of the Jordanian water system linked to JV by USAID). This manuscript is an attempt at illuminating precisely these hidden [social] stories behind the interconnected boxes and circles, which represent one construction of water's reality, through the case study of WUAs. It should be noted that WUAs do not even feature on the schematic map in Figure 2.

Of all the international community and donor-driven interventions and institutional innovations in Jordan—and there are many—WUAs are the most emblematic of the participatory water management ethos popular amongst the international water policy community. There is a wealth of literature that exists about them in many contexts and while the donor-based literature often promotes them as the ultimate conduit for democratization in water resources, especially irrigation management (Bandaragoda 1999, Groenfeldt and Svendsen 1999), much of the scholarly literature is critical of the outcomes realized through WUAs (Meinzen-Dick and Zwarteveen 1998, Brown 2011). It has been argued elsewhere that there is no such thing as an apolitical, strictly technocratic context for water management (e.g. see Zeitoun and Warner 2006). The context in Jordan, however, is even more explicitly political and is imbricated with some of the most unstable and emotive geopolitical fault lines in the world. With due regard to and discussion of that context, we focus on the WUAs to highlight the epistemic linkages between the global and local water management landscapes. We discuss how the WUA's reality is refracted not only by the local realities but also how those realities are in themselves refracted by the nature of the Jordanian state and the international community's role in sustaining that state. WUAs are significant here because they encapsulate the tensions and interactions between the local water users, Jordanian water managers and international development and donor establishments.

The bigger point of the article is that Jordanian waterscapes cannot be understood in isolation from the nature of the Jordanian state and its vulnerability to regional, geopolitical seismicity. The rationality of the Jordanian

state, as well as that of the Jordanian farmers—which in itself is a contested category—is no less legitimate than the rationality of the international donor and policy community. Technocratic rationality premised upon absolute water scarcity fails to capture the politically inflected rationality of present day water use in Jordan. Sooner the gap between the technocratic and political rationality is recognized by all, sooner one can move beyond the present stalemate between the Jordanian water users, policy makers and their international funders.

Water Politics and Water User Associations

Much of the critical literature on water resources, starting from the 1990s, has addressed issues of social power (Mustafa 2002, Swyngedouw 2004, Budds 2006), gender (Sultana 2009, Halvorson 2003), capitalist accumulation and neo-liberalism (Bakker 2004), state formation (Swyngedouw 1999) and the social construction of knowledge around water, e.g. the hydrologic and hydrosocial cycle (Linton 2008, Linton and Budds 2004, Loftus 2007). This article, in the same vein as critical water literature, questions who has access to, and control over water, by what right, and to what effect in the JV? We try to apprehend the new waterscapes being created through the donor induced institutional structure of the WUAs in the JV (Adhikari and Goldie 2010).

~~Social capital is perhaps one of the most vexing and elusive concepts to have been introduced into the development lexicon over the past two decades (Portes and Mooney 2003). Having an intellectual pedigree dating back to the work of~~

Pierre Bourdieu (1986), it was popularized in the so-called mainstream development thinking by the work of Robert Putnam et al. (1993) and to a lesser extent by James Coleman (1988). Putnam et al.'s (1993: 167) most often cited definition of social capital describes it as, "trust norms and networks . . . that can improve the efficiency of society by facilitating coordinated action." Presumably in the context of Putnam et al.'s comparative study of economic progress between northern and southern Italy, in which the definition is proposed, the understanding of "efficiency" is strictly limited to economic efficiency. James Coleman (1988: 98), in a less normatively prescriptive mode, argues that:

> Social capital is defined by its function. It is not a single entity but a variety of different entities, with two elements in common; they all consist of some aspect of social structures, and they facilitate certain actions of actors - whether persons or corporate actors - within the structure.

The above definition is agnostic about the function that social capital may serve or the form it may take, but links it to social structures and makes its functionality contingent upon those structures. Much of the empirical work drawing upon the concept of social capital has understood it as trust and norms of reciprocity, with horizontal associations as an institutional manifestation of those norms and networks (Graeff and Svensden 2013, Sonderskov 2009, Putnam 2000, Hakli 2010).

The concept of social capital as generally used and applied in the development field has come under considerable criticism, especially the notion of social

capital as accumulated norms and networks within a society, (e.g., see Fine 1999 and 2007). Fine (1999) quite eloquently argues that if social structures are indeed arbiters of developmental outcomes, then why bother with the concept of social capital that seems to explain everything and then nothing. Bebbington and Perrault (2000), through their work in highland Ecuador, establish that horizontal associations and collective action is an empirical reality with observable impacts, mostly positive on people's lives and livelihoods. Therefore, such collective action deserves analytic attention under the rubric of social capital in a structural context. Foley and Edwards (1999), in their review of 45 empirical studies using the concept of social capital, offer the comparable insight that social capital-based studies drawing upon a more structurally-based understanding of the concept, more than the norms and networks-based understanding, alert us to the fact that access itself is not enough but rather the quantity and more importantly the quality of resources and networks is at issue.

Pierre Bourdieu's (1980 and 1984) originally postulated three interchangeable capitals: economic, cultural and social. He argued that social capital that emerges from human relationships is in fact deeply embedded in power relations. If anything, social capital is one of the main conduits through which power relations are reproduced. Holt (2008) further posits that uneven accrual of embodied social capital can be understood in conjunction with the differential power relations within society. These power relations are reproduced and sometimes resisted as fluctuations of social capital resonate through the networks of social relationships that impact individuals and communities. This research on WUAs in Jordan seeks to unpack the power relations within which,

~~WUAs are embedded, the quality and type of social capital that manifests itself through the WUAs, and how the co-production of WUAs and concomitant social capital affects intra- and inter-WUA water distribution and welfare outcomes (Ostrom 1996).~~

Ostrom's (1990) work on collective action among common-pool resource users gave the initial impetus for participatory strategies to more effectively and efficiently manage and sustain natural resources. Some literature has further supported Ostrom's line of thinking, suggesting broadly that user participation in irrigation water management will lead to more reliable water distribution, a reduction in government spending, lower operations and maintenance costs, higher collection of water fees, greater agricultural productivity, and management benefiting from more incentivized employees, i.e. farmers. (Tang, 1992; Frederiksen and Vissia, 1998; Vermillion and Sagardoy, 1999; IFAD, 2001; Lubell et al., 2002; Hamdy, 2004; Vermillion, 2006; Garces-Restrepo et al., 2007; Ghazouani et al., 2012).

Some country-level case studies and meta-analyses of regional WUAs have supported the claims of the superiority of WUAs over other government or private management schemes (Vermillion, 1997; Ostrom, 2002; Qiao et al., 2009; Uysal and Atis, 2010; Huang et al., 2010; Bandyopadhyay et al., 2010). Yet others have raised serious doubts about the prospects for WUAs. These doubts spring from inconclusive outcomes of WUA performance to date (Akkuzu et al., 2007; Yami, 2013; Bhatt, 2013), insufficient efforts towards preparing the political, legal and social environment within the overarching government for a change to

WUA management (Tang, 1992; de Graaf and van den Toorn, 1994; Frederiksen and Vissia, 1998; Meizen-Dick, 2007; Garces-Restrepo et al., 2007; Hodgson, 2009; Ghazouani et al., 2012; Suhardiman, 2013), and a lack of desire among farmers to fully support this change for fear of a greater financial burden or lack of the necessary management skills and capacities (Vermillion, 1991; de Graaf and van den Toorn, 1994; IFAD, 2001; Hamdy, 2004; Garces-Restrepo et al., 2007).

Some of the critical literature on WUAs more importantly questions if the focus should be solely on physical and tangible improvements in the performance, production and efficiency of the water supply or whether there is a social development aspect to this entire endeavor as well (Groenfeldt, 1998; Vermillion, 1991; Plusquellec, 2002; Ghazouani et al., 2012). The question arises as to whether goals should include and even prioritize farmer equity, empowerment and maintaining a voice as well as gender participation. It has been noted in several cases that WUAs can simply re-establish existing and unequal power relations between groups in a given environment as well as be a conduit for gender-based exclusion (Cleaver, 1999; Mollinga et al., 2007; Adhikari and Goldie, 2010; Bhatt, 2013; Kemerink et al., 2013; Meinzen-Dick and Zwarteween 1998; Veldwisch and Mollinga, 2013). We will be engaging with the promises and perils of WUAs in Jordan below, mindful of the larger developmental objectives that they could help address. But before we do that we would like to briefly elucidate the methodological basis of our data collection and subsequent analysis.

The interview/ethnographic data discussed in this manuscript is based upon a series of key informant interviews conducted in Amman, Jordan in November 2013 and in the JV in the summer of 2014. The interviews in Amman were conducted with key personnel related to the Jordanian water sector including functionaries of the Jordanian Ministry of Water (MWI), Water Authority of Jordan (WAJ), international donor representatives, prominent NGOs, academics and researchers. The ten interviews were directed towards understanding the issues and politics surrounding water development and management in Jordan at the national level. In the JV again, primarily water users as owner operator, tenant and contract farmers were interviewed starting from the northern JV all the way to the southern end of it by the Dead Sea. A total of twenty three interviews in the JV along with the policy interviews in Amman lasted between a minimum of one hour to three hours. The interviews were supplemented with participant observation, particularly in the JV and where interactions were often with groups of farmers or decision makers, which were frequently joined by people passing by or curious onlookers. The farmer interviews were based upon convenience sampling, while the Amman interviews were purposive. Furthermore, the findings of the interviews were also triangulated with an extensive literature review delving into the wealth of gray literature on the topic as well as relatively more parsimonious published work.

The interviews were in an ethnographic mode, where the concern was not with a large representative sample but rather with the intensive deeper interactions. The ethnographies were directed to get to the respondents' experiences and subjective views on the range of water related problems they face and their

perception of the causes. The ethnographic approach derives its strength not from the representativeness of the sample but rather from the depth and quality of interactions and the strength of analysis (Silverman 2001, Hoggart *et al.* 2002). Since the research was in a somewhat critical realist mode, the focus was more on a relational understanding the structural and discursive causes of the empirical reality instead of just the contours of it, as would have been appropriate with a more extensive formal questionnaire based research design (Sayer 1992). The key analytical method for the qualitative data was, therefore, theory driven interpretation of the results. The core research problem of the manuscript on multiple meanings of water helped identify key words, phrases and structures of argument that spoke to the problem (Silverman 2001). The narratives were subjected to theory driven interpretation with reference to the prior conceptual literature on WUAs and water in general, and topically on Jordan in particular. The multiple strands of explanation, nuance and the mutual tension between multiple interpretations of the respondents' that emerged from the ethnographic data, reflect the lived reality of WUA in the JV, and is represented accordingly in the narrative below.

The unbearable politics of water in Jordan

Water is not just politicized in Jordan—it is politics. The exceptional political valence of water cannot be appreciated without an understanding of the nature of the Jordanian state and society. The former Ottoman province of Trans-Jordan became a British mandate post WWI in 1922 and eventually the independent Hashmite Kingdom of Jordan in 1946. The subsequent defining events in the

history of Jordan were the ones that happened outside of its formal borders—the formation of the state of Israel in 1948, Jordan's defeat at the hands of Israel in 1967, the U.S. invasion of Iraq in 2003, and the outbreak of conflict in Syria in 2011. The first two events resulted in a massive refugee influx into Jordan resulting in almost half of the population hailing from the west bank of the Jordan River. The conflicts in Iraq and Syria also resulted in a substantial influx of refugees, further increasing the pressure on Jordan's water resources (Mercy Corps 2014). Until 1970, the Palestinian population of the country was politically-dominant, represented by various Palestinian insurgent groups, the main amongst them being the Palestine Liberation Organization (PLO). The Jordanian state headed by King Hussein reclaimed control over the country in the aftermath of the brutal Black September conflict against the PLO in 1970. Since then, Jordanian society has settled into an unofficial truce of sorts in which the indigenous Jordanians populate the state institutions and the Palestinian populace dominates the business and commercial life of the country. Water poverty in Jordan is often blamed by the Jordanian officials on the refugee influx in the country since 1948, in the absence of which there would have been more than twice as much water per-capita than is presently the case. Water has, therefore, emerged as one of the lynchpins of maintaining the stability of the state within the above context.

To assert its legitimacy through economic and political integration, the Hashemite regime early on initiated programmes for the resettlement of Palestinian refugees and sedentarization of pastoral Bedouin communities. Centralized planning of water services was critical in allowing state penetration

into rural, arid and unsettled areas (Van Aken et al, 2008). Government subsidies and loans were also key to expanding commercial agriculture from the JV to the highlands, where it now far exceeds the acreage under customary rainfed agriculture (Venot and Molle 2008). By the 1990s groundwater irrigation in the highlands had expanded significantly thanks to private investors, so much so that the Azraq Oasis' Ramsar wetland in eastern Jordan underwent an ecological collapse. More recently the groundwater abstraction from largely illegal private wells is estimated to be lowing the groundwater level by about 1m/year (Van Aken *et al.* 2008, Ministry of Water and Irrigation 2013). Attempts to restrict pumping through higher prices were ineffective, as were crop based water quotas, mostly because most pumping was illegal anyway. The groundwater decline in the highlands has reached a crisis level and the government is making desperate attempts to limit the pumping, but very powerful interests are typically at play. The task of limiting groundwater pumping is further complicated by the fact that most wealthy landowners are disinterested in economic productivity and complex farm management. They instead use the land for prestige agriculture, often with fruit orchards encasing a villa and swimming pool for weekend leisure (Van Aken *et al.* 2009).

Jordan is already using 98% of its treated wastewater in agriculture to reallocate freshwater for domestic purposes. The influx of 1.2 million Syrian refugees since 2011 has further exacerbated the picture especially in the northern governorates, where there has occurred some tension over water between local and refugee populations (Ministry of Water and Irrigation 2013). Jordanian water managers have pinned their hopes on mega-projects such as fossil

groundwater transfer from the Disi Aquifer in the south to Amman, and the desalinated water from the Red Sea to Dead Sea water conveyor. Nevertheless 50% of the water in the domestic sector is lost from leakages, illegal connections and technical losses (UN Human Rights Council 2014). It ~~is certainly~~may be more cost effective than the mega-projects to address ~~these~~ systems losses as well as to control illegal pumping in the highlands (Hagan 2008). The state, however, has to maintain service delivery and tariffs within socially acceptable limits and sometimes turn a blind eye to system leakages even if just the water subsidy costs the government around 1% of the GDP (Ministry of Water and Irrigation 2013). Jordan is moving towards addressing some of the institutional and structural problems in the water sector under pressure from international donors, but the progress continues to be slow.

The above mentioned international literature has done a reasonable job of documenting the politics and policy distortions in the Jordanian water sector. But as Bonn (2013) notes, it is precisely the type of emphasis on demand side management and economic rationality that has somewhat isolated the donors, and donor-related actors from the water establishment in Jordan. The Jordanian officialdom was not averse to confirming their preference for supply side interventions and resentment towards donor emphasis on institutional reform:

> To me our priority is infrastructure development and we are not very receptive to institutional change type projects, e.g., we think that the USAID funded ISSP [Institutional Support and Strengthening Program] project is a waste of time. I do not deny the utility of having transparent

> institutional blocks doing their job, but I don't think that the type of institutional compartmentalization that the ISSP project is pushing is the way forward (A senior MWI operative, 17th Nov. 2013)

> What we expect from donors is infrastructure and water treatment facilities. We love JICA because they don't go for the wishy-washy institutional stuff and ask us to change things. They just put down the infrastructure and move on. We appreciate that (A senior MWI operative, 12th Nov. 2013).

Beyond the inevitable infrastructure bias of the water engineering establishment, some independent observers also concede the wisdom of attention to the supply side because of the frequent spikes in population from continuous waves of refugees:

> All the water models we have done for Jordan point towards demand management, whereas the country aspires to have supply enhancements. Donors too don't want to fund supply enhancement. . . . Reality is that if we had heeded the demand management angle in the past, we would have been in very serious trouble right now with the huge influx of refugees from Iraq and then Syria. So I guess what was a mistake according to donors is saving us right now (An independent water researcher, 19th, Nov. 2013).

The issue is not just economic return from the water investment but more importantly about political stability. From groundwater mining in the highlands of the country to the usage of water-intensive crops to turning a blind eye to non-revenue water--political stability is the premier value driving these water management issues in the country:

> Political stability is one amongst other objectives of water management, e.g., economic return on water and long term sustainability. But if you take political stability out of any equation of objectives, you are really talking nonsense in the Jordanian context. I guess what I am calling for is realpolitik in the water sector (A senior water policymaker 18th, Nov. 2013).

> It is not just about line losses from the infrastructure but also from the fact that people don't pay their water bills, particularly in the aftermath of the Arab spring. Somehow since the Arab spring we can see it in the data that people are paying less and less of their water bills. This is reflected in other sectors too. Since the Arab spring more and more people are driving around Amman without paying their vehicle registration fee. Our minister is rightly concerned about the link between governance and water, because it is critical, especially since the Arab spring (A senior MWI operative, 17th, Nov. 2013).

The concern with political stability is also wedded to the classic post-colonial concern with nation-building and modernist trappings of developmentalism,

especially as they may be reflected through land settlement and water development. The Jordan Valley in particular is a venue for such nation-building particularly since it is across the border from the highly-affluent, technologically-sophisticated, and western (self-proclaimed) country of Israel:

> This country does have an idealized view of agriculture where they, imitating the Israelis--wanted to settle down the pastoralist population to build a nation. Now they are continuing with that inertia. In fact, there is a strong sense of competition with the Israelis. They think that if they [Israelis] can do it, so can they. I mean they have lamps on roads in the middle of nowhere just so that Jordan may gleam like Israel from the sky (An expatriate water expert 17th Nov. 2013).

> In the JV if you look over the border the Israelis have planted date palms and the Jordanians want to do the same. In fact, the King and some of his partners had date farms down there and they made some very good money. So I guess they are going to move towards that, not sure just because they want to compete with the Israelis. Perhaps it is just more profitable to do so (An expatriate water expert 19th Nov. 2013).

The crop mix along with the policies of making the desert bloom are largely informed by the nation-building ethos of the Jordanian state. The Jordanian state has a very centralized structure with most of the power concentrated with the royal family. The royal family in turn depends upon patronage politics with the local tribes and appeasement of the powerful Palestinian commercial interests.

It is in this context that the following narrative of WUAs and water development in the JV must be understood. The WUAs in the JV are a prime example of donor-driven institutional innovation~~and induced social capital~~. How this institutional innovation~~at induced social capital~~ carves out a space for its' functioning within the techno-political environment of Jordan in general and the JV in particular is the discussion to which we now turn.

The Techno-waterscapes of the Jordan Valley

The Jordan Rift Valley, which encapsulates the wider basin of the Jordan River, is located between Jordan and Israel/Palestine~~West Bank~~, extending from the area of Lake Tiberias/Sea of Galilee to Aqaba, located at the very southern point of Jordan on the Red Sea (Figure 1). This paper is primarily concerned with the portion of the Jordan Rift Valley on the Jordanian side running from the northwest corner of Jordan to the Dead Sea, which will be referred to simply as the Jordan Valley (JV). There are farms and water user associations located below the Dead Sea that are not herein part of the main discussion. The JV is over 300 meters below sea level and makes for an ideal climate that allows for year round agriculture.

There are four main sources of water for agriculture in the JV: surface water from the Yarmouk River, spring and well water, treated wastewater and runoff water that is stored in dams. According to its agreement with Israel, Jordan takes a portion of the water from the Yarmouk River, which runs between Jordan and Syria and then empties into the Jordan River. Jordan also now buys a

portion of the water from Lake Tiberias from Israel. Fresh springs and wells are located in the northwest corner of Jordan and they are exploited for water use, with many farmers also using wells on their farms. Treated wastewater now represents an important source of water for farmers. Wastewater from Amman and Zarqa is transferred to the Khirbat as-Samra treatment plant, after which the treated water flows through the Zarqa river basin to the King Talal Dam and then on to the JV. Finally, there are many dams that have been built along the side wadis [~~, or~~ valleys], of the JV and these help to capture winter rain water runoff (Figure 2).

The King Abdullah Canal (KAC) is~~acts as~~ the main apparatus for water transportation in the JV. It is roughly 110 kilometers long and has pumping stations along its length to siphon water to the adjacent farmlands. The KAC holds freshwater (water from the Yarmouk River, Lake Tiberias, springs/wells and dams) for about 65 kilometers from its beginning to the central town of Deir Alla. At Deir Alla, the portion of freshwater not allocated to agriculture is pumped up to Amman and used for drinking water. The lower half of the KAC transfers treated wastewater only. Along the very last portion of the KAC, for roughly 15 kilometers, water from Kafrein dam, and fresh springs is transported to farmland. A unique feature of the canal is that it is simultaneously a conveyance as well as a storage structure for water. This is an important feature that must be borne in mind as the narrative progresses.

According to the Jordan Valley Authority (JVA), the government agency responsible for water distribution to farmers in the JV, the water that is being

held in the KAC at any point in time ranges from 500,000 to 800,000 cubic meters. The water depth in the canal ranges from 1.6 to 2 meters. The storage capacity in the KAC allows the JVA to open and close gates along its length to serve supply needs at any point in time and to regulate its flow more effectively. Water in the KAC is closely monitored and controlled from the JVA Control Center in Deir Alla with a SCADA (Supervisory Control and Data Acquisition) system. This computer program can view in real-time the level and flow of the water in the KAC from the various gauges along its length. It should be noted that not all of the gauges are working so it is not completely accurate and reliable. Nevertheless, the important point is that there is a fairly sophisticated system at work to distribute water for irrigation purposes in the JV.

After the water is siphoned from the KAC at the pump stations (PS) located along its length, water is further distributed either by the force of gravity, or with pumps. Water flows through main and lateral lines to reach individual farm units. Each farm unit has a Farm Turnout Assembly (FTA), which includes a flow regulator, a flow limiter, and sometimes a water meter. The flow limiter is supposed to ensure a constant flow anywhere from 6 to 12 liters per second, depending on the area of the farm, the crop pattern, and the specificities of the general area of water distribution. Water meters were originally installed in all FTAs but many have been broken for various reasons. After water enters a farm through the FTA, it is the farmer's business as to how it is used.

Citrus, vegetables, date palm trees and bananas are the main crops planted in the Jordan Valley. Medjool data palms in particular are gaining acreage, mostly in the

southern region of the valley. Needless to say, all of these crops require significant irrigation throughout the year. The government's reluctance to enforce quota reductions for water-intensive crops such as citrus and bananas and its inability or lack of motivation to prevent water theft from the KAC reflects a clear valuation of political concessions above water conservation and economic considerations.

Water development in the JV, just as in the rest of Jordan, is an exercise in political appeasement. Crop-based quotas were frozen in 1991, limiting banana and citrus orchards eligible for higher water quotas to those already cultivated and recognized (Molle and Venot, 2008). However, due to political pressure from the Ghazawi tribe, prominent in the North of the Valley, the JVA violated this policy in 2004 when it recognized illegal citrus orchards that had been planted on lands receiving the water quota for vegetables (Molle and Venot, 2008). In addition to securing higher water quotas, influential tribes such as the Adwan tribe in the south of the JV have also successfully pressured the government into maintaining tariffs on imported bananas (Van Aken et al, 2009). As one farmer in the JV noted:

> Those banana plantations are owned by the big/powerful guys; there is water for them. There is no water for the smaller, weak farmers. The water problem is for the small guys and the weak guys (A Jordan Valley Farmer, 20/08/2014).

Molle and Venot (2008) remark that such policies institutionalize inequity in access to water and serve to further dissuade citrus and banana farmers from switching to more water-efficient crops. Furthermore, turning a blind eye to water theft at the WUA level as well as the individual farmer level removes any legitimacy of the JVA to enforce the rules. Pipes sunk into the KAC to pump water illegally are ubiquitous features of the JV waterscape (Figure 3). But law enforcement will mean depriving powerful people of important extra revenue. And as Courcier and Guerin (2004) warn, if farm revenues were substantially reduced without compensation, there could be social and political unrest, tampering and destruction of water monitoring devices, corruption and bribing of officials, and many farmers may just default on water payments. The WUAs are emerging as a main conduit through which these tensions can be negotiated and we give an overview of those below.

Overview of WUAs in the Jordan Valley Waterscape

The WUAs are organized around pump stations (PS) in the JV. The pump stations have numbers corresponding to the kilometer distance from the head of the KAC. WUAs are frequently referred to by the number of the PS on which, they are organized, e.g. WUA at PS 28, PS 33, etc. This is how WUAs will be referred to in subsequent discussions. Every pump station has three to four actual pumping units and the WUA offices are typically located near the pumping apparatus. The pumps are within the jurisdiction of the JVA while everything downstream from that is within the WUA's jurisdiction, except for some maintenance activities that continue to be the JVA's responsibility. The WUAs are limited to distributing the

water among farm units, giving out violations for tampering with the infrastructure or taking water out-of-turn, and somewhat informally negotiating the water order or schedule of allocations with the JVA..

The Water User Associations (WUAs) in the JV were initiated and implemented by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), the German development agency, in 2001. These WUAs were established with the stated and official intent of making water distribution for agriculture in the JV more efficient, technically and financially, as well more effective in managing the day-to-day activities. While the intent of donors may have been to promote participatory water management in the JV, the actual impetus for farmers to join the WUAs was often fear of the privatization of water and consequent~~ly~~ higher cost~~s~~ of water, as well as subsidized irrigation piping in some cases:

> Some people were scared that WUAs were going to become a private company – but slowly the fears of privatization went away. The French agency gave pipes to individuals. French paid for 70% and members 30% and if not a member then 40% to incentivize people to join and get pipes for cheaper [in 2008]. In general, the water association looked better and better organized, so other farmers wanted to join (A farmer at PS 33, Circa Aug. 2014).

The actual implementation of the WUAs began in 2002 in a gradual fashion throughout the JV. The first associations were established in the north and every year, new associations were created. In the beginning, this would simply mean

that a president was chosen and the WUA was created essentially in name only. None of the WUAs took on any substantial responsibilities for water distribution until 2008. Each WUA has a contract with the JVA that details the duties of the JVA and the WUA. The contract also specifies ~~, as well as~~ the budget of the WUA that is supplied by the JVA ~~and~~which covers the salaries for the WUA employees, basic administrative costs, and light maintenance costs (if the WUA has maintenance duties).

Each WUA administers an area of land anywhere from 3660 to 15735 dunums (1 hectare = 10 dunums), or 56 to 374 farm units, with each farm unit covering roughly 35 dunums. Every WUA has a president, an official (who might be an engineer) responsible for the technical distribution of water, and a cadre of ditchriders, or those who monitor the lateral lines and open and close them according to the water schedule~~-~~. Membership in the WUA's general council, or main body, is voluntary; membership varies, with some WUAs having almost 100% membership and others with only a minor percentage of the farmers included. There is usually a one-time joining fee and in some WUAs, there is also a monthly or yearly fee. The general council elects a smaller group of farmers to the administrative council, which handles any important decisions throughout the year and is also responsible for electing the president. The number of farmers in the administrative council depends on the internal rules of the WUA. Members of the general council usually only attend a yearly update meeting and meetings in which, elections for the administrative council are held.

There are 28 WUAs established to date [winter 2015], including those within the aforementioned region below the Dead Sea. Only 13 WUAs have taken on water distribution responsibilities, which simply means making sure that the water travels from the KAC intake point to the individual farmers and that lateral lines are opened according to the set water schedule. Each functioning WUA is also responsible for monitoring the lateral lines and making sure that farmers are not taking water out-of-turn. The JVA still establishes the water order, i.e. the quantity and timing of water distribution between water users, but the WUA implements it. Some of the WUAs have also taken on light maintenance tasks, meaning that they can repair small problems with the FTAs, ~~, but~~ L~~l~~arger maintenance tasks are, however, still under the purview of the JVA. Yet other WUAs are still in the process of being established, and either do not have a full working core of WUA employees, or are simply~~with some also~~ not officially registered with the Jordan Cooperative Council. While the original intent may have been to transfer greater responsibility to the WUAs, there is a wide gap between this ambition and the reality on the ground.

WUAs are stymied by~~with~~ a lack of substantive power due to their unclear legal and political status (ISSP 2013). There are also concerns among JVA staff over their job security if a majority of their tasks were to be transferred to the WUAs. This could be the potential impetus for delays in expanding WUA responsibilities, ~~,~~ I~~i~~n particular delays in addressing some of the enforcement and rational water use issues could be accounted for by this fear. Such insecurities at times lead to open hostility towards the WUAs on part of some JVA employees:

> There are more problems with the associations than in areas without them. There are no problems with water management up to the pump [JVA's mandate]. The problem is within the field area where water gets distributed to farmers. There are more problems between farmers and stealing happens (A JVA official at the stage office for PS 21-41, 20/08/2014).

Other more senior JVA officials are, however, more receptive towards the WUAs as they lessen their workload:

> The water user association is the best. I'm not looking out for my own interests but for the general interest. Some Directors really want to be king and want power, which is why they don't want the associations to be successful and take away some of their power. But for me, I am happy to have the associations take away some of the burden from me; farmers no longer come here en masse to complain; they go to the association president and that is better for me, [because of] less time that I have to spend on that (A senior JVA official, 26/08/2014).

The JVA has not allowed WUAs to collect water tariffs from farmers and discourages them from carrying out activities to generate additional income (ISSP 2013). Current task transfer agreements are limited and hardly cover operational staff salaries, with very little funding for administrative and maintenance costs (ISSP 2013).

> Farmers pay a 50 JD upfront membership fee, 40 JD of which is for shares in the bank, and over the course of several years the shares amount has to increase to 200 JD. The WUA doesn't have much money, it usually just breaks even. We have a contract with the JVA that only applies to the salaries of the employees. Right now the one problem is that the WUA is not profitable, we need an alternative income source, we have many ambitions but first we need money [for those ambitions] (WUA official at PS 55, circa Aug. 2014).

This lack of financial autonomy is one of the biggest question marks on the long term sustainability of the WUAs, as was confirmed by many of the respondents during our fieldwork:

> No, none of the WUAs could survive [without donor funding] as they have salaries to pay. None of the employees are going to work without a salary and this comes from the contract with the JVA. I don't see self-sustainability/complete independence possible in the future (WUA official at PS 41, circa Aug. 2014).

The salaries for the actual WUA staff are in fact paid by the JVA through a fund set up by the donors. USAID proposed a series of training sessions to bolster the capacity of WUAs to take on more tasks but political and legal struggles must first be addressed to soothe adverse power dynamics in transition. At the moment, some WUAs have become extensions of powerful interests in a transactional relationship with the state through the JVA. It is this dynamic along

with how the WUAs become a conduit for the conduct of politics through water that we now turn in the following section.

The State, WUAs, and "Farmers" in the Jordan Valley

Beyond the concept and formal institutional arrangement of WUAs, in practice they are also suffused with the type of political machinations documented at the macro-scale in the previous section. Van Aken et al. (2009) suggest that agricultural rights and development in the JV have traditionally been distributed in a system of rents and patronage to constituencies loyal to the King. Powerful Bedouin tribes, such as the aforementioned Adwan and Ghazawi tribes, are rewarded for their loyalty and support in maintaining political stability (Van Aken et al, 2009). It is no coincidence, then, that when the WUAs ~~as an instance of induced social capital~~ are superimposed on such a social landscape, they inevitably reflect the social realities. The presidents of the WUAs in the north of the valley with strong tribal structures tend to inevitably also be tribal leaders who are elected more by consensus than any real elections. In fact, one of the main benefits of joining a WUA is to gain formal patronage of the association president to improve one's access to water both collectively and individually:

> WUA at PS 28 got more water because of 'wasta' [connections] with some higher JVA people. We complained about not getting the same extra amount of water. In the end, PS 33 was able to get the same extra water that PS 28 was getting. So our president of PS 33 had the ability to go to the 'big guys' as well to get what our area needed. He talked to higher-level

> people at the Ministry [MWI] and in turn was also given a two hour extension on the water time. WUAs collectively have more power than individual farmers so it is worth being a member. Presidents are strong with power and influence in every WUA, though 'wasta' levels vary . . . In 5 years there have been no [water related] problems [within the WUA] – our WUA President is elected through consensus rather than elections and is esteemed (A WUA official at PS 33, 16/08/2014).

Such formalization of patronage through WUAs is a common critique of participatory models of resource management as mentioned above. Many in the field argued that patronage is part of the Jordanian culture. They argue that accountability, which is supposed to be the lynchpin for the success of the WUA model, simply does not exist. This is because of the patronage based ethos of the smaller farmers, and because of the massive power differentials between farmers, e.g.:

> There is no accountability in the associations. If the farmer has a problem with a JVA ditchrider, he can complain to the JVA and something is done so there is accountability. But in an association, a farmer has no one to complain to about a WUA employee so there is less accountability (Farmer at PS 41, 20/08/2014).

The point of the above farmer is that almost all of the employees of a WUA are hired based upon their tribal and familial linkages to the WUA president and therefore, the accountability of those employees is likely to be minimal. In fact,

we came across instances of people complaining about the competence of the ditchriders and engineers in WUAs, suggesting in somewhat unambiguous terms that they have their jobs because of *wasta* and not because of any specific skills:

> Technical specialists here are not trained well - the one here [pointing to the engineer sitting there] is trained for window metal works not water engineering. Ditchriders are illiterate and can't read meters or write violations. As long as there is aid and support there will be an association, not afterwards (Farmer at PS 33, 17/08/2014).

Furthermore, the ditchriders, at times in front of us, tended to make light of angry farmers coming into the WUA offices to complain about maintenance issues affecting their water access (Figure 4). The ditchriders protested lack of time as a reason for not following up with the JVA about the farmers' complaint, whilst they had been touring around and having tea with us all day. Even then the same farmer also acknowledged that he would have been lost without the WUA because he would have had to spend the entire day at the JVA office to get his problem solved, to no avail.

Despite the evidence of such disfunctionality, on balance it seemed that the farmers, particularly the smaller farmers, deemed WUAs more accessible and more able to prevent water thefts and ensure system maintenance than the JVA:

> Before the association it was the big powerful people that got their water. A farmer could steal water when the JVA wasn't looking . . . Now, with the

WUA's presence and my personal presence there is monitoring in the field. I am a member of a monitoring council, which monitors the behavior of the association. . . Just the other day, the ditchriders gave me a violation because my son was removing the flow limiter to clean it. There was a water turn but water wasn't coming, so my son wanted to clean it, but because it's the ditchrider's job to clean the FTA and not the farmer's, he got a violation. My son didn't know this regulation but I am not angry because now everyone knows they are not supposed to do that (A small tenant farmer PS 95. 24/08/2014).

~~The association just does~~Some WUAs perform maintenance on the FTA~~farm turnout assembly~~ as in case of PS 95. Before, when there were no WUAs, the JVA had a very large area to cover~~maintain~~ for maintenance. There was just one team in the JVA northern directorate for maintenance from Addassiya to PS 41 [a very large area] so if anyone had a problem, it might be a long time before it was solved. Now the WUA has this smaller area to look after and it can respond faster and at least alert the JVA more quickly about a maintenance issue that has arisen (Farmer on PS 33. Circa Aug. 2014).

The president was out here until 2 a.m. the other day to help farmers so he is good and active in helping farmers (Farmer on PS 28, Circa Aug. 2014).

The key efficacy of the WUAs as envisaged in the original formulation is to intercede on behalf of the farmer within the JVA bureaucracy. There, at least, the

WUA is more accessible to farmers even if the responsiveness is variable based upon the strength of the tribal structure and one's proximity to the centres of power within that structure, e.g., in the cases of PS 28, 33, Rama and Kafrein WUAs, to name a few. In other WUAs where there were multiple tribes vying for influence, sometimes the WUA simply fell apart because the multiple kinship based groups could not work together, e.g., in~~, e.g.,~~ PS 50. Farmers in the areas where there were no WUAs seemed to think that WUA areas were better off than them, even if ~~they maintained that~~ it was easier to bribe and steal water from the JVA in the absence of a WUA.

> Farmer 1: The association is much better than the JVA, because it is closer to farmers. They can demand more water hours and the WUA works for them. At the association sometimes they run the pumps at night to make sure farmers get their water. There is no paying attention to farmers' specific needs here under the JVA . . . But in general I get the water I need.
>
> JVA official: Well he thinks that because he steals water.
>
> Farmer 1: The employees of the government have a very low salary, so we support their salaries by helping them out here and there. We give them a little bit of money for gas for their bikes. You want the reality right? We give bribes to get more water . . . The bribe isn't for more hours of water, it's to allow the farmer to get away with putting in a bigger flow limiter and thus being able to take more liters per second of water during a regular turn.

Farmer 2: I have no water because I don't pay bribes. . . But if there was an association….There is a particular family and they own many farm units here, so they would just end up dominating the association. It's part of the reason why we can't decide on a president.

Farmer 1: With an association [at least] you would have someone here to impose order, but here we like and live by ~~the~~ chaos.

The above exchange at PS 50 on 20/08/2014 encapsulates the tension between the desire for accessibility and relative order that may emerge through WUAs, and the fear of domination by more powerful farmers that could ~~may~~ also be an outcome in the social environment of the Jordan Valley.

In the south of the JV, there are more investors coming down from Amman and other areas to start growing medjool date palms, which require a steep investment in the first few years but yield better long-term profits. These farmers stand in contrast to the many other mostly small-scale vegetable farmers~~, although a few vegetables farmers also own more extensive plots of land~~. What is concerning is that within this diverse farmer setting, as in PS 91, WUA membership can be quite low. In PS 91, there are only around 40 members as opposed to hundreds of members in other WUAs throughout the JV. While it might seem reasonable that large farmers would have an interest in being a part of the WUA, many of them are actually relatively disinterested in the workings of the WUAs. They still tend to get their requisite water all the

same, either by stealing or just casually approaching the WUA or JVA directly. In situations such as this, the efficacy of the WUA is relatively limited and the general impression was that tenants (Egyptians or Pakistanis most of the time), as well as owners, were happy enough with the workings of the WUA--~~,~~ when they knew about its existence~~,~~ S~~because s~~uch powerful people got their way, with or without the WUA, anyway.

> In our WUA there are 244 farming units, 145 farmers in total and 75 farmers are WUA members. It's just the palm farmers who haven't joined for the most part, as they only need water and don't care to get involved past that. Palm farming only really started in earnest in the last five years. The palm farmers always owned the land and have recently taken the land back from renters to grow palms. There are 71 farm units of palm trees this year and there were 47 units last year of palm trees so the increase has been rapid (A WUA official at PS 95. 24/08/2014).

The verdict on WUAs in the JV is mixed as a result of the foregoing discussion. In more tribal regions the WUAs become conduits for imposing tribal discipline and patronage upon the water users. In regions with multiple tribal loyalties, the WUAs were either dysfunctional or less functional than others. In more commercial farmer-dominated regions, the WUAs were largely present to enforce rules on smaller farmers, as the large commercial farmers seemed to get away with what they wanted. The most important criteria distinguishing the efficacy of one WUA from the other was the ability of the WUA president ~~of the WUA~~ to negotiate compensatory water turns for the WUA in case water timings

were missed because of electricity or equipment failure. The second most important criteria seemed to be to get favourable changes in the water order, officially or unofficially, as illustrated in case of PS 28. On balance the farmers did appreciate the greater accessibility and responsiveness, however imperfect,, that had emerged in~~from~~ the WUAs.

The functionality of the WUAs is also deeply imbricated with the geopolitics and political culture of Jordan. The local farmers are not oblivious to the fact that they are benefiting from more water from the KAC right now because of the conflict in Syria, which frees up water from Syrian agriculture. They are also somewhat painfully mindful of the fact that water coming from the Yarmouk is a Faustian bargain legitimizing Israel's disproportionate appropriation of the Jordan River valley water to the relatively small advantage of Jordan (also see Beaumont 1997):

> Note that Israel takes too large a share of the river water from Jordan and this isn't fair. Here there is no water, thanks to Israel. We complain about water and everything else but no one listens, no one is getting the message in the West (A small farmer, PS 28. Circa Aug. 2014).

The cropping decisions in the valley are also not independent of the ongoing wars in Iraq and Syria. There are cheaper agricultural products in Saudi Arabia that make for competition for Jordanian farmers and it is also difficult for Jordanian farmers to export due to the frequent closure of the Iraqi and Syrian borders to trade, and the difficulty of traversing the Israeli administered

territory to reach customary regional and international markets. The attraction of the medjool date palms is partially an outcome of that geopolitical reality, as reported by many vegetable farmers in the valley.

Stepping down from the geopolitics, though, there are the centralized patronage-based domestic politics of the Jordanian state within which the WUAs are embedded. We repeatedly challenged complaining farmers with the question of why they do not hold their WUA leadership accountable if they are not happy with the job they are doing. Very rarely did a farmer ever seem to understand the concept of holding the leadership accountable; instead, most kept insisting upon the president doing his job. The following exchange with a Jordanian farmer and Pakistani farmer should illustrate the point (PS 91. Circa Aug. 2014):

> *Jordanian Farmer:* In Jordan, we like to sit in chairs and have power. Instead, the president needs to be going to the field to find out what farmers need.
>
> *Pakistani Farmer:* Well it's obviously not being done right now….and you still have to go to the JVA to ask for more water.
>
> *Jordanian farmer:* If members want to protect the association, then the president has to act for the needs of the farmers. The association is a million times better, but we need a strong president. The ditchriders don't have power, so it's not their fault. . . .The association at its core should be working to the advantage of farmers. When one of the wealthy guys comes

into the WUA office, then he is warmly welcomed and given tea, but if there are poor farmers in trouble the president will shoo them away.

Pakistani farmer: They should be dealing with people with respect, there shouldn't be a difference between the big and the small. This [disrespect] never happened with the JVA. [an aside to the authors in Urdu] Farmers here are afraid of the WUA/JVA. Farmers don't call to complain because it's mostly the smaller, weaker guys who have complaints and they know that they can't combat the *wasta* of big farmers who can just make a quick phone call to fix their situation.

In an undemocratic culture, people's self image becomes that of clients, whose patrons need to be benevolent out of some internal calling and moral imperative rather than accountability to the people. The political culture coupled with the nature of the Jordanian state as a centralized monarchy is going to be one of the main impediments towards the WUAs realizing their full potential. The potential is not just in terms of more efficient and equitable water distribution or even in better system management and financial return, but also in terms of the creation of an institutional space for social organization. The potential is recognized by the WUA membership as well and is a cause for some pessimism on their part. Some WUA members ~~because they~~ see the future of the WUAs tied in with the evolutionary trajectory of the Jordanian state:

There was talk of several WUAs coming together [as a confederation] to share facilities and maintenance crews, but the associations can not

become a political entity. You don't find much of a civil society or volunteering culture here [in Jordan], for the fear of it turning political. There is always a fear [on part of the state] of creating a space, which could be politicized. The WUAs could be that space and hence there will be limits to what it can do (Farmer, PS 91. 23/08/2014).

Conclusion:

In Jordan ~~It has been argued elsewhere that social capital is a meso level concept. It draws attention to mechanisms through which people with less power gain more power and find avenues for enhancing livelihoods, managing resources, negotiating power relations, expressing subjectivity, and attempting to affect change within specific social structural conditions (see Mustafa and Qazi 2007).~~ WUAs ~~as an example of induced social capital seem to have~~despite being an international donor driven institutional innovation, on balance, have a positive effect in terms of ~~enhancing livelihoods and allowing for more efficient and possibly equitable resource management~~allowing collective bargaining and addressing water users' concerns. They do seem to do a good job of preventing water stealing downstream from the pump stations, even if they turn a blind eye to stealing directly from the KAC. In this sense, the WUAs enable~~have a good effect on~~ the rearticulation of farmers' subjectivity in terms of a collectivity rather than individuals. Therefore, there is less stealing from within the community but a continued sense of entitlement when it comes to stealing from the state. As one farmer said: "[Thanks to the WUA] farmers now feel shame

about stealing water [from other farmers]" (A tenant farmer at PS 95, 24/08/2014). Another said:

> I understand when farmers put pipes into the KAC because water is needed. I also do not have a problem with farmers taking water like this directly from the KAC because that's taking from the JVA and the government. I would have a problem with anyone taking water from within the PS 41 system because that would be like stealing from other farmers. But taking from the KAC is different. In fact, I have a small "house" pipe taking water directly from the KAC (A farmer at PS 41. Circa Aug. 2014).

But given the social structural conditions within which WUAs operate, their affect on negotiating power relations can be seen at two levels—power between the state and the society, and internal power relations within the society. The WUA has a positive role in the JV in terms of~~on~~ negotiating~~evening out~~ power relations between the state and society~~—and therein lies the positive valence of the social capital that inheres in WUAs~~. However, the WUAs evidently~~seem to~~ also legitimize existing intra-societal and class power relations, though at the same time making them more transactional rather than simply patronizing or predatory. P~~And p~~erhaps that too is a partial positive outcome.

Is Jordan a water scarce country? From most popular points of view it is. But water scarcity in Jordan is not an absolute, unmediated or hard reality. The argument of this article is that to insist upon absolute scarcity is not an apolitical

fact but a position with deep political resonance~~— absolute scarcity is in fact, a Malthusian shibboleth — useful in ferreting out the Malthusians today, as other shibboleths were useful in finding other Jewish or members of the same tribe in the region in antiquity~~. If there was absolute scarcity, then Jordan has done all that it can do for demand management and must turn to supply enhancement as the only way. The Jordanian water managers are, therefore, right. But if water scarcity is a politically-mediated reality, then a wider trope of interventions might suggest themselves. This is not to deny the reality and urgency of the political compulsions that mediate the scarcity but rather to point towards political levers through which those mediations and policy distortions can be addressed.

The connection between macro-level water politics and local level water management mediated by WUAs is quite stark. Some of the larger farmers in the valley were not averse to speaking of Israelis admiringly in terms of giving a fair deal to all their farmers. The same farmers were also engaged in stealing water on the Jordanian side. But their view was that if everybody followed rules, they would too and if nobody did, then they wouldn't either. The Jordanian state, however, captive to its logic of state-building and balancing multiple ethnic, tribal and even geopolitical interests, does not feel secure enough to fulfill the criteria set out by the farmer for a fair deal for all. But along the way, the Jordanian state may also have to constrict the space for the crystallization of politic~~sized social capital~~ around WUAs to maintain the balancing act. ~~That will be unfortunate because~~ Eexplicit politicization of the WUAs will entail making making them a conduit for the water users for negotiating their rights and status

as citizens with the state. It will be unfortunate if that were not allowed--and it is not being allowed--as that will enable the ~~will allow this induced social capital~~WUAs to finally fulfill their~~its~~ potential to provide a space for substantively negotiating power relations- with the state and articulating socio-political subjectivity~~and articulating socio-political subjectivity~~. WUAs' promise can never just be limited to water—and it would be a shame if were.

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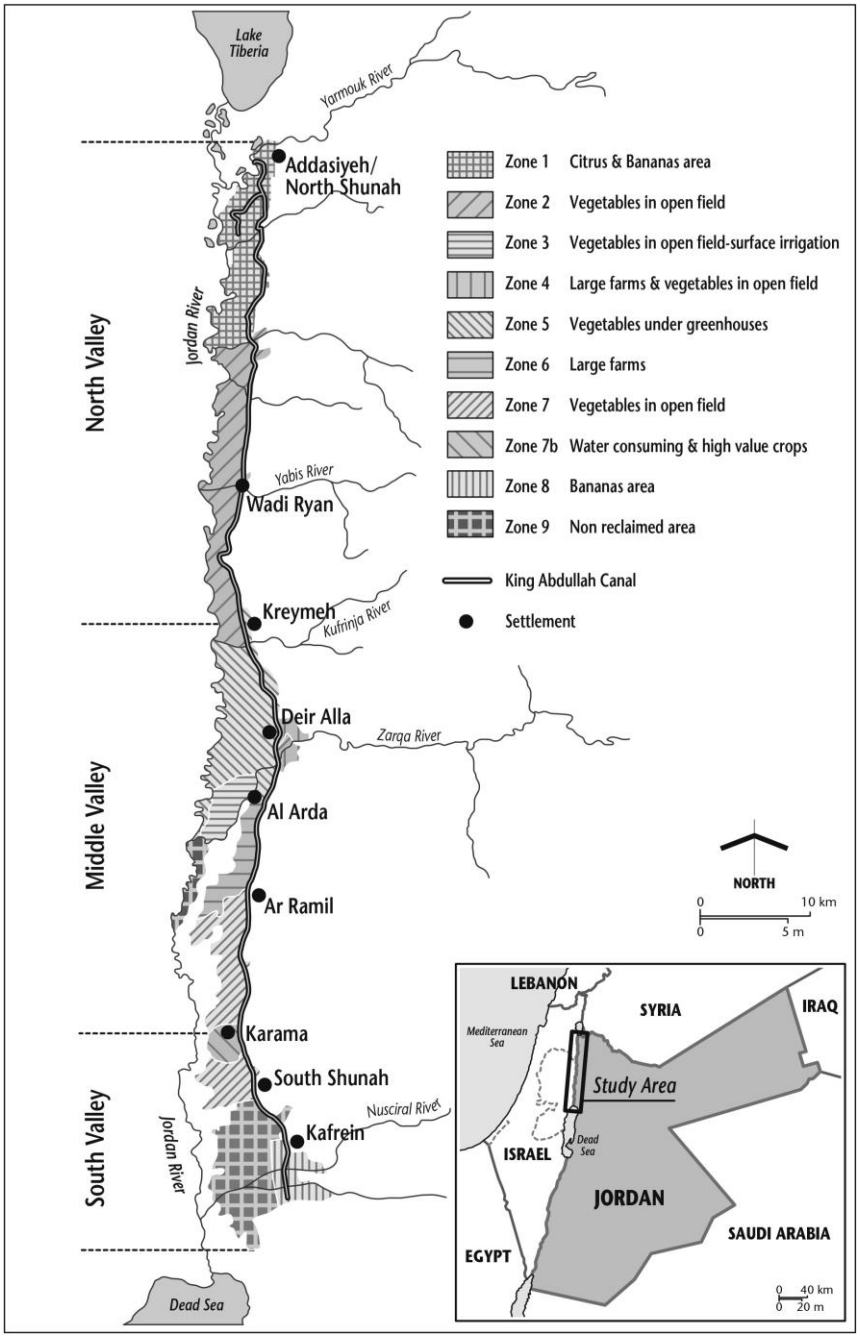

Figure 1: A general map of Jordan Valley with landuse.

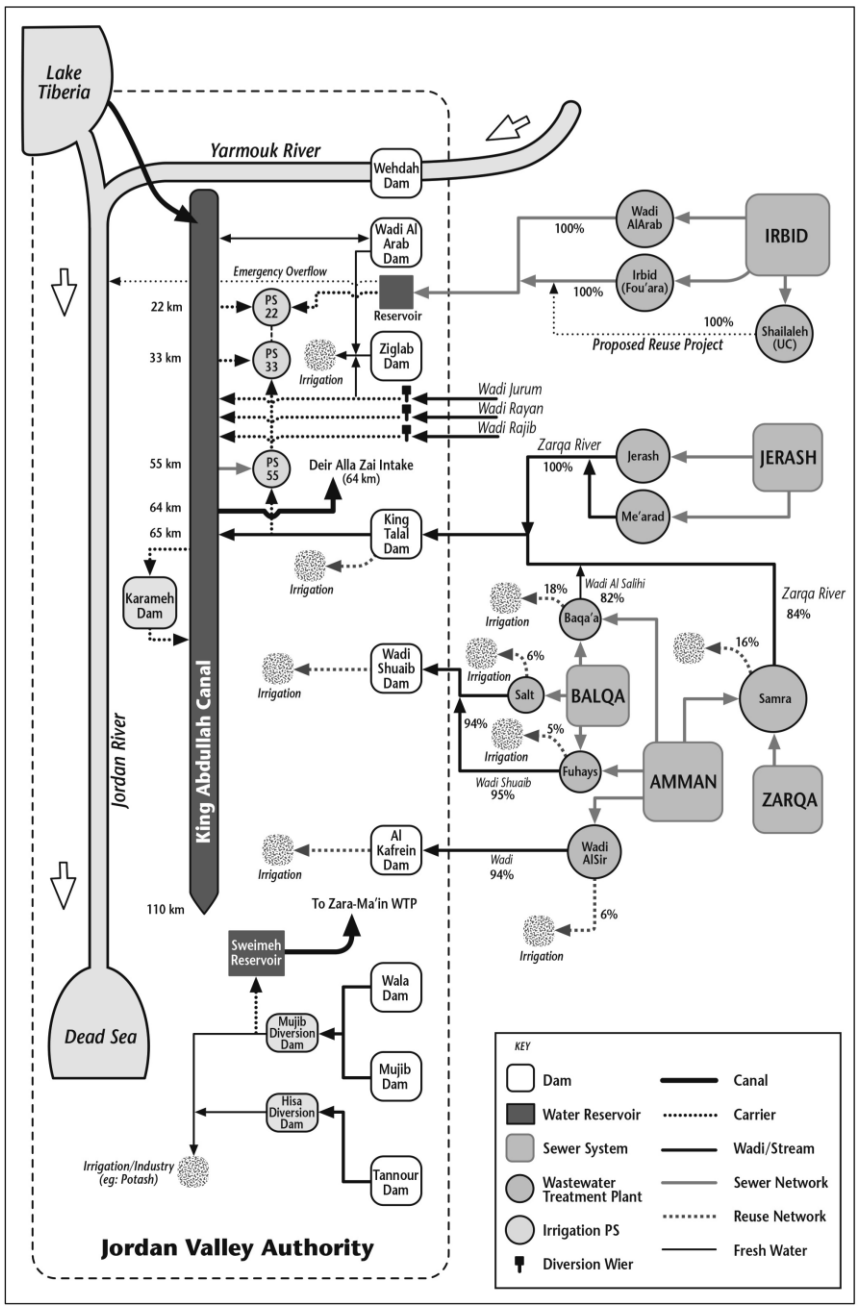

Figure 2: Schematic of Jordan Valley water management system.

Figure 3: An illegal water pipe syphoning water directly from the King Abdullah Canal.

Figure 4: An angry farmer and dismissive ditchriders at a WUA office.